

## WHAT IS CLAIMED IS:

1. An isolated or recombinant polypeptide:

A) that:

5 a) specifically binds polyclonal antibodies generated against a 12 consecutive amino acid segment of SEQ ID NO: 2; and

b) comprises at least one sequence selected from the following group (see SEQ ID NO: 2):

10 LeuCysPheArgMetLysAsp; ValLeuTyrLeuHisAsn;  
GlnLeuLeuAlaGly; IleSerValValProAsn;  
SerProValIleLeuGlyVal; GlnCysLeuSerCysGlyThr;  
ProIleLeuLysLeuGlu; PheTyrArgArgAspMetGly;  
15 LeuThrSerSerPheGluSer; PheLeuCysThrSer;  
GlnProValArgLeuThr; PheTyrPheGlnGln;  
ArgAlaLeuAspAlaSerLeu; and GlyLeuHisAlaGluLysVal;

B) that:

a) specifically binds polyclonal antibodies generated against a 12 consecutive amino acid segment of

20 SEQ ID NO: 6; and  
b) comprises at least one sequence selected from the following group (see SEQ ID NO: 6):

SerLeuArgHisValGlnAsp; ValTrpIleLeuGlnAsn;  
IleLeuThrAlaVal; IleThrLeuLeuProCys;  
25 AspProThrTyrMetGlyVal; SerCysLeuPheCysThrLys;  
ProValLeuGlnLeuGly; PheTyrHisLysLysSerGly;  
ThrThrSerThrPheGluSer; PheIleAlaValCys;  
CysProLeuIleLeuThr; PheGluMetIleVal;  
GlnAspLeuSer; ValProArgLysGluGlnThrVal;  
30 SerLysGlySerCysPro; ArgAlaAlaSer;  
ProCysGlnTyrLeuAspThrLeuGlu; and SerGlyThrThr; or

C) that:

a) specifically binds polyclonal antibodies generated against a 12 consecutive amino acid segment of

35 SEQ ID NO: 13 or 15; and  
b) comprises at least one sequence selected from the following group (see SEQ ID NO: 13 or 15):

ITGFIND; VWTLQG; NLVAV; VAVITC; DPIYLG I; MCLYCEK;  
PTLQLK; FYRAKTG; RTSTLES; FIASS; QPIILT; FELNI;  
SMCK; NDLN; VPR(R/S)TSVT; VPRSDSVT; TCKYPEALE;  
TGRT; SKRDQP; or SKGDQP.

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2. The polypeptide of Claim 1:

- a) wherein said polypeptide comprises a plurality of  
said sequences selected from said group in  
section b) of part 1A;
- 10 b) wherein said polypeptide comprises a plurality of  
said sequences selected from said group in  
section b) of part 1B;
- c) wherein said polypeptide comprises a plurality of  
said sequences selected from said group in  
15 section b) of part 1C; or
- d) which specifically binds to polyclonal antibodies  
generated against an immunogen selected from the  
group consisting of:
- i) the polypeptide of SEQ ID NO: 2;
- 20 ii) the polypeptide of SEQ ID NO: 6;
- iii) the polypeptide of SEQ ID NO: 13; and.
- iv) the polypeptide of SEQ ID NO: 15.

3. The polypeptide of:

- 25 A) Claim 1A, wherein said 12 consecutive amino acid  
segment is selected from (see SEQ ID NO: 2):

LeuCysPheArgMetLysAspSerAlaLeuLysValLeuTyrLeuHisAsn-  
Asn;

IleSerValValProAsnArgAlaLeuAspAlaSerLeuSerProValIle-  
30 LeuGlyValGln;

SerProValIleLeuGlyValGlnGlyGlySerGlnCys;

ProIleLeuLysLeuGluProValAsnIleMetGluLeu;

ThrSerSerPheGluSerAlaAlaTyrProGlyTrpPhe;

PheLeuCysThrSerProGluAlaAspGlnProVal;

- 35 ThrGlnIleProGluAspProAlaTrpAspAlaProIle; or

ThrSerSerPheGluSerAlaAlaTyrProGlyTrpPhe;

- B) Claim 1B, wherein said 12 consecutive amino acid segment is selected from (see SEQ ID NO: 6):  
ArgAlaAlaSerProSerLeuArgHisValGlnAspLeu;  
SerSerArgValTrpIleLeuGlnAsnAsnIleLeu;  
5 ProValThrIleThrLeuLeuProCysGlnTyrLeu;  
GlyValGlnArgProMetSerCysLeuPheCysThr;  
PheCysThrLysAspGlyGluGlnProValLeuGlnLeu;  
ThrSerThrPheGluSerAlaAlaPheProGlyTrpPhe; and  
CysSerLysGlySerCysProLeuIleLeuThrGln; or
- 10 C) claim 1C, wherein said 12 consecutive amino acid segment is selected from (see SEQ ID NO: 13 or 15):  
SMCKPITGTINDL;  
NQQVWTLQGQNL;  
PVTVAVITCKYP;  
15 GIONPEMCLYCE;  
YCEKVGEQPTLQL;  
TSTLESVAFPDWF;  
SKGDQPIILTSE;  
SKRDQPIILTSE; and  
20 GKSYNFELNIND.
3. The polypeptide of Claim 2, wherein said polypeptide:
- 25 i) is a mature protein;  
ii) lacks a post-translational modification;  
iii) is from a rodent, including a mouse;  
iv) is from a primate, including a human;  
v) is a natural allelic variant of IL-1 $\delta$  or IL-1 $\epsilon$ ;  
vi) has a length at least 30 amino acids;  
30 vii) exhibits at least two non-overlapping epitopes that are specific for a rodent IL-1 $\delta$ ;  
viii) exhibits a sequence identity over a length of at least about 20 amino acids to SEQ ID NO: 2;  
ix) exhibits at least two non-overlapping epitopes which are specific for a rodent or primate IL-1 $\epsilon$ ;  
35 x) exhibits a sequence identity over a length of at least about 20 amino acids to SEQ ID NO: 6 or 15;

- xi) is glycosylated;  
xii) has a molecular weight of at least 10 kD with natural glycosylation;  
xiii) is a synthetic polypeptide;  
xiv) is attached to a solid substrate;  
xv) is conjugated to another chemical moiety;  
xvi) is a 5-fold or less substitution from natural sequence; or  
xvii) is a deletion or insertion variant from a natural sequence.
4. A soluble polypeptide comprising:  
a) a sterile polypeptide of Claim 2;  
b) said sterile polypeptide of Claim 2 and a carrier, wherein said carrier is:  
i) an aqueous compound, including water, saline, and/or buffer, and/or  
ii) formulated for oral, rectal, nasal, topical, or parenteral administration.
5. A fusion protein having a polypeptide sequence of Claim 2 and further comprising:  
a) a mature protein of Claim 2;  
b) a detection or purification tag, including a FLAG, His6, or Ig sequence; or  
c) sequence of another cytokine or chemokine.
6. A kit comprising a polypeptide of Claim 2, and:  
a) a compartment comprising said protein or polypeptide; and/or  
b) instructions for use or disposal of reagents in said kit.
7. A binding compound comprising an antigen binding site from an antibody, which specifically binds to a mature polypeptide from:  
a) SEQ ID NO: 2;

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- b) SEQ ID NO: 6;
- c) SEQ ID NO: 13; or
- d) SEQ ID NO: 15.

- 5    8.        The binding compound of Claim 7, wherein:
- a) said binding compound is an Fv, Fab, or Fab2 fragment;
  - b) said binding compound is conjugated to another chemical moiety; or
  - 10    c) said antibody:
    - i) is raised against a polypeptide comprising a 12 consecutive amino acid segment of SEQ ID NO: 2, 6, 13, or 15;
    - 15    ii) is raised against a mature IL-1 $\epsilon$ ;
    - iii) is raised to a purified rodent IL-1 $\delta$  or rodent or primate IL-1 $\epsilon$ ;
    - iv) is immunoselected;
    - v) is a polyclonal antibody;
    - vi) binds to a denatured IL-1 $\delta$  or IL-1 $\epsilon$ ;
    - 20    vii) exhibits a K<sub>d</sub> to antigen of at least 30  $\mu$ M;
    - viii) is attached to a solid substrate, including a bead or plastic membrane;
    - ix) is in a sterile composition; or
    - 25    x) is detectably labeled, including a radioactive or fluorescent label.

9.        A kit comprising said binding compound of Claim 7, and:

- 30    a) a compartment comprising said binding compound; and/or
- b) instructions for use or disposal of reagents in said kit.

10.       A composition comprising:
- 35    a) a sterile binding compound of Claim 7, or
  - b) said binding compound of Claim 7 and a carrier, wherein said carrier is:

- i) an aqueous compound, including water, saline, and/or buffer; and/or
- ii) formulated for oral, rectal, nasal, topical, or parenteral administration.

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11. An isolated or recombinant nucleic acid encoding a polypeptide of Claim 2, wherein:

- a) said polypeptide of Claim 2 is IL-1 $\delta$  or IL-1 $\epsilon$  from a mammal; or
- 10 b) said nucleic acid:
  - i) comprises the mature coding sequence of SEQ ID NO: 1, 3, 12, or 14;
  - ii) encodes an antigenic peptide sequence of SEQ ID NO: 2, or SEQ ID NO: 6, 13, or 15;
  - 15 iii) encodes a plurality of antigenic peptide sequences of SEQ ID NO: 2, or SEQ ID NO: 6, 13, or 15;
  - iv) exhibits identity to a natural cDNA encoding said segment;
  - 20 v) is an expression vector;
  - vi) further comprises an origin of replication;
  - vii) is from a natural source;
  - viii) comprises a detectable label;
  - ix) comprises synthetic nucleotide sequence;
  - 25 x) is less than 6 kb, preferably less than 3 kb;
  - xi) is from a rodent or primate;
  - xii) comprises a natural full length coding sequence;
  - xiii) is a hybridization probe for a gene encoding said IL-1 $\delta$  or IL-1 $\epsilon$ ;
  - 30 xiv) is a PCR primer, PCR product, or mutagenesis primer; or
  - xv) encodes an IL-1 $\delta$  or an IL-1 $\epsilon$  protein.

35 12. A cell, transformed with said nucleic acid of Claim 10.

13. The cell of Claim 12, wherein said cell is:

- a) a prokaryotic cell;
- b) a eukaryotic cell;
- c) a bacterial cell;
- d) a yeast cell;
- e) an insect cell;
- f) a mammalian cell;
- g) a murine cell;
- h) a primate cell; or
- i) a human cell.

14. A kit comprising said nucleic acid of Claim 11,  
and:

- a) a compartment comprising said nucleic acid;
- b) a compartment further comprising a mammalian IL-18 or IL-18 protein or polypeptide; and/or
- c) instructions for use or disposal of reagents in said kit.

15. An isolated or recombinant nucleic acid that

- a) hybridizes under wash conditions of 40° C and less than 1M salt to SEQ ID NO: 1;
- b) hybridizes under wash conditions of 40° C and less than 1 M salt to SEQ ID NO: 3, 5, 12 or 14.

16. The nucleic acid of Claim 15, wherein:

- a) said wash condition is at 50° C and/or 500 mM salt; and
- b) exhibits identity over at least 20 nucleotides to SEQ ID NO: 1, 3, 5, 12, or 14.

17. The nucleic acid of Claim 16, wherein:

- a) a wash condition is at 65° C and/or 150 mM salt;  
or
- b) exhibits identity over at least 50 nucleotides to  
SEQ ID NO: 1, 3, 5, 12, or 14.

18. A method of modulating a cell involved in an inflammatory response comprising contacting said cell with an agonist or antagonist of a mammalian IL-1 $\delta$  or IL-1 $\epsilon$  polypeptide of Claims 1.

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19. The method of Claim 18, wherein:

- a) said contacting is in combination with an agonist or antagonist of IL-1 $\alpha$ , IL-1RA, IL-1 $\beta$ , IL-1 $\gamma$ , IL-2, and/or IL-12;
- 10 b) said contacting is with an antagonist, including binding composition comprising an antibody binding site which specifically binds an IL-1 $\delta$  or IL-1 $\epsilon$ ; or
- c) said modulating is regulation of IFN- $\gamma$  production.

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A method of:

- A) making an antiserum comprising an antibody of Claim 7, comprising immunizing a mammal with an immunogenic amount of:
  - a) a rodent IL-1 $\delta$  polypeptide;
  - b) a peptide sequence comprising a 12 consecutive amino acid segment of SEQ ID NO: 2;
  - c) a rodent or primate IL-1 $\epsilon$  polypeptide; or
  - 25 d) a peptide sequence comprising a 12 consecutive amino acid segment of SEQ ID NO: 6, 13, or 15;thereby causing said antiserum to be produced; or
- 30 B) producing an antigen:antibody complex, comprising contacting:
  - a) a rodent IL-1 $\delta$  protein or peptide with an antibody of Claim 7; or
  - b) a rodent or primate IL-1 $\epsilon$  protein or peptide with an antibody of Claim 7;thereby allowing said complex to form.

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